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## **GLAST E/PO Program Status**

**Science Working Group Meeting 10/1/04**

Lynn Cominsky  
Sonoma State University

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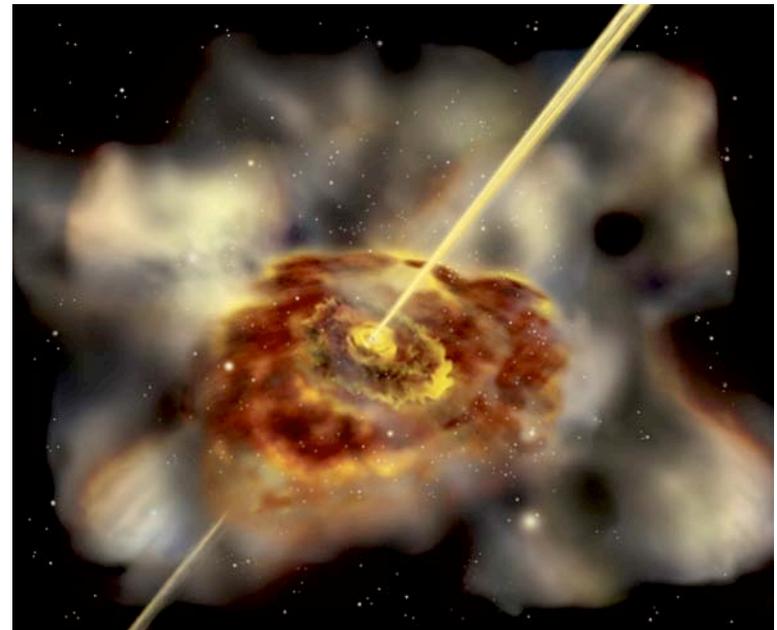
***GLAST***



# E/PO Work Breakdown Structure

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- 1) Management
- 2) Assessment and Evaluation (WestEd)
- 3) Web based Materials
  - Web Site – Newly revised
  - *Space Mysteries (2004-2006)*
- 4) Educator Training
  - Educator Ambassadors Program
  - Conference participation
- 5) Printed materials
  - TOPS Lesson Modules
  - Posters and Activities
- 6) *SLAC Virtual Visitor Center (2004-5)*
- 7) PBS documentary (Tom Lucas Productions) (2003-2005)
- 8) GLAST Telescope Network





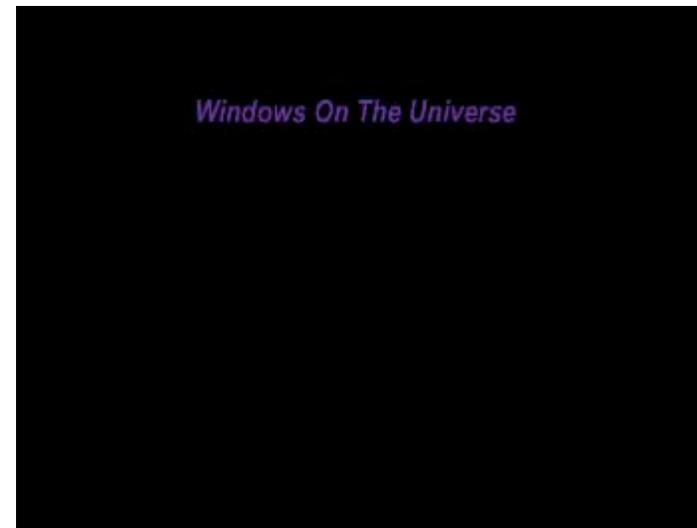
## GLAST E/PO Web Site

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<http://glast.sonoma.edu>



- ▶ Evaluated by WestEd in 2003
- ▶ Revised entirely following review
- ▶ New sections for Educators, Scientists and the Public



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## Space Mysteries



- <http://mystery.sonoma.edu>
  - Originally funded by NASA's LEARNERS program
  - 3 interactive web-based games that teach physical science and mathematics
  - First GLAST-funded SM now in design process

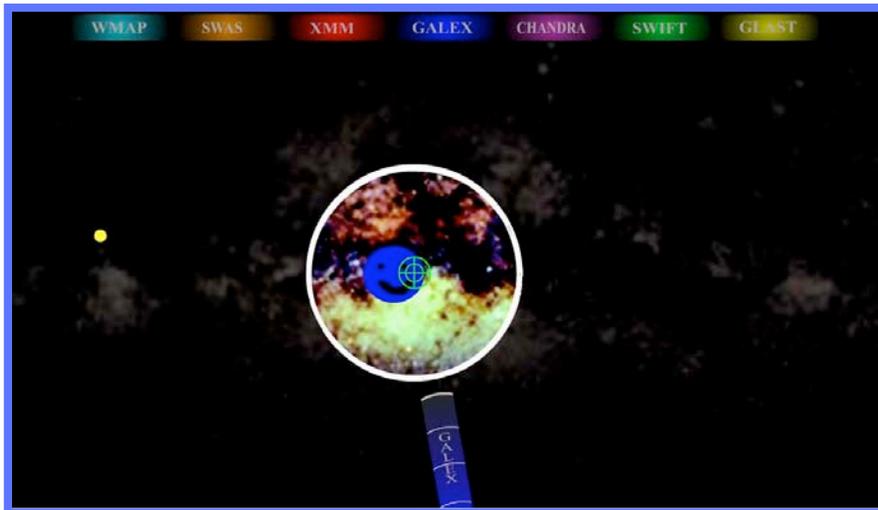


Image from New Space Mystery Flash animation of sky seen in different regions of the Electromagnetic Spectrum

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# Educator Training since 9/03

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## ▶ **California Science Teacher's Association**

- Combined Swift and GLAST booth (10/03, 10/04)
- AGN workshop by Plait & Silva (10/03), Cominsky & Silva (10./04)

## ▶ **National Science Teacher's Association**

- AGN workshop by Silva & EA Ford , Modeling the Universe (4/04)
- AGN workshop by Silva at NSTA-Regional (12/03)

## \_ **American Association of Physics Teachers**

- AGN and TOPS workshop (4/03)
- AGN and booth in (8/04)

## \_ **Modeling the Universe workshop at HEAD (9/04)**

## \_ **California Science Teachers Association (10/03)**

- “Things My Mother Never Told Me About the Universe” - Cominsky
- “Seven Ways a Black Hole Can Kill You” - Plait



# GLAST Ambassadors Program

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- 10 GLAST Ambassadors now funded, trained at SSU in 7/04 with 14 others funded from different programs.
- “The 7-day training was a superior professional development event that strongly met its goals..” Wested evaluation report



EA Della investigates spacetime



EA Garrett builds tasty AG model



# E/PO Educator Training

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Meet the award-winning GLAST Ambassadors:

- Jeff Adkins, Deer Valley High School, Antioch, California
- Teena Della, Terry Fox Secondary School, Coquitlam, British Columbia (Canada)
- Sharla Dowding, Newcastle High School, Newcastle, Wyoming
- Deanna Duncan, School for Environmental Studies, Cabarrus, North Carolina
- Michiel Ford, Holton High School, Holton, Kansas
- Mary Garrett, Instructional Designer, Michigan
- Walter Glogowski, Ridgewood High School, Norridge, Illinois
- Ellen Holmes, Bangor Public Schools, Bangor, Maine
- Daryl Taylor, Williamstown High School, New Jersey
- Pamela Whiffen, Palo Verde Middle School, Phoenix, Arizona

▶ <http://glast.sonoma.edu/ambassadors>

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## EA Workshops since SWG in 9/03

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- **8/26/03** – EA Jason Smith talked about the GLAST mission at the Challenger Center in Alexandria, Virginia.
- **10/4/03** – EA Tim Brennan presented “Where Particle Physics Meets Orbiting Astronomy: NASA’s GLAST Program” at the AAPT in Maine
- **10/17/03** – EA Mary Garrett presented “Out of this World Mathematics” to the Michigan Council of Teachers of Mathematics.
- **10/18/03** – EA Mike Ford presented “Seeing the Invisible Universe” to teachers in Holton, Kansas.
- **10/24/03** – EA Teena Della discussed GLAST with the BC Association of Physics Teachers
- **11/13/03** – EA Jeff Adkins discussed GLAST at the NCN-AAPT
- **11/14/03**- EA Mike Ford presented “Astronomy with the GLAST Telescope Network (GTN)” and “Invisible Universe” at NSTA Mid-west Regional in Kansas City
- **11/19/03** – EA Jeff Adkins discussed GLAST with the teachers of the Antioch School District, California



## EA Workshops since SWG in 9/03

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- **11/14/03** EA Jason Smith presented “The Gamma-ray Universe” at the NSTA regional meeting in Louisville, KY
- **12/04/03** – EA Tim Brennan presented “NASA’s GLAST Program and the Future of Gamma-Ray Astronomy” to the Vermont Science Teacher Association
- **12/2/03** EA Daryl Taylor “Bringing NASA into the classroom” to teachers at Rutgers University
- **1/24/04** – EA Mike Ford “Exploring the Invisible Universe with your Students” to teachers in Holton, Kansas
- **2/13/04** – EA Mike Ford “Mission of GLAST and the GTN” to Lawrence Astronomy Associates, at Lawrence University, Kansas
- **2/20/04** - EA Teena Della “Magic in the Classroom” at the CTA Professional Development Day
- **2/28/04** - EA Teena Della “NASA’s GLAST mission” at the BC Association of Physics Teachers
- **3/12/04** – EA Mary Garrett “Active Galaxies and Mathematical Models” at the MACUL conference in Michigan



## EA Workshops since SWG in 9/03

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- **3/12/04** – EA Daryl Taylor “What NASA Can Do for You” at the Black Horse Pike Public Schools Inservice Training Day
- **4/3/04** – EA Jeff Adkins discussed GLAST during a “A Project-based Space Academy at Deer Valley High School” at NSTA-regional
- **5/7/04** - EA Teena Della “NASA: Magic in the Classroom” at the BC Science Teachers Association
- **6/21/04**- EA Mary Garrett presented “Active Galaxies: Activities in Science and Mathematics from NASA” at ISTE, in New Orleans
- **6/28/04** – EA Ellen Holmes presented “Exploring the Invisible Universe” at the Challenger Center in Maine
- **7/9/04** – EA Teena Della presented “What’s New with NASA?” at Simon Fraser University
- **7/13/04** – EA Walter Glowgowski presented “Things that Go Bang in the Sky: AGN and NASA’s GLAST telescope” at the Illinois STA
- **7/12/04** – EA Ellen Holmes presented “Exploring the Invisible Universe” at the NASA Joint Propulston Conference in Florida

# GLAST



## EA Workshops since SWG in 9/03

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- **8/2/04** – EA Jeff Adkins presented “Using Digital Image Analysis to teach parallax” at the AAPT national meeting in Sacramento, CA
- **8/9-12/04** – EA Teena Della presented “Space Mysteries” at the Canadian Space Agency Educator Conference

### ▶ Workshops and Meetings in 2004 (submitted)

- **10/04** – EA Ellen Holmes will present “Active Galaxies” at Southworth Planetarium in Bangor, Maine
- **10/04** – EA Sharla Dowding will present “Huge Black Holes: Measuring the Monster in the Middle” at the Montana Educator’s Conference
- **11/04** – EA Jeff Adkins will present “Activities from NASA’s GLAST mission” at the NSTA-regional in Portland, Oregon
- **2/05** - EA Ellen Holmes will present “Size Matters: Using GLAST to explore the very small and very large matters in our Universe”, at SEEC in Newbern, Maine

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## GLAST EDCATS Totals: FY2004

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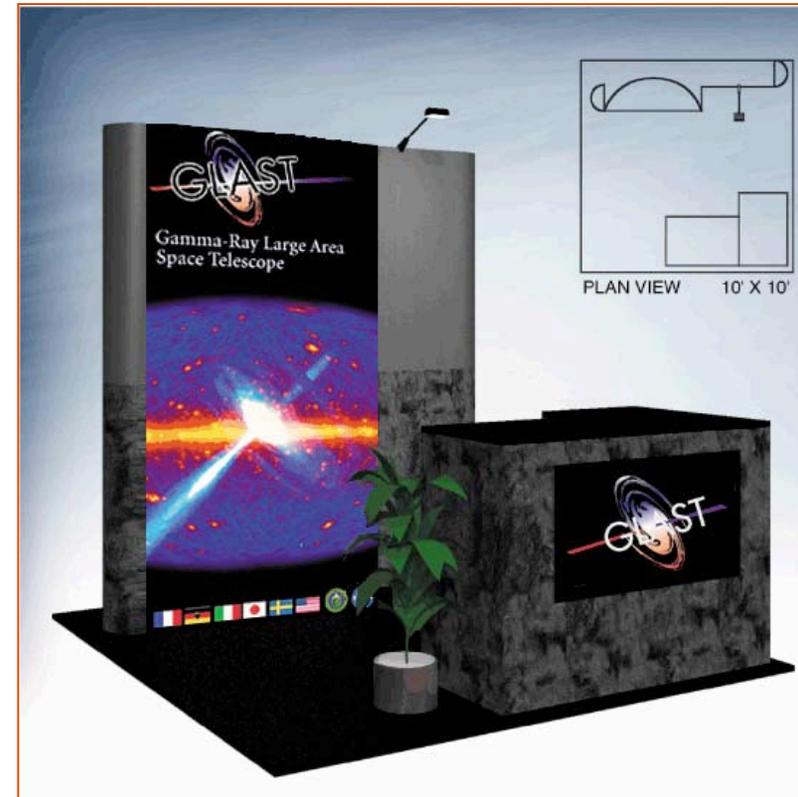
- **46 Teacher workshops**
  - 3523 direct teachers trained
  - 21,170 indirect teachers through exhibit booth
- **19 Public events**
  - 346 direct participants
  - 14,530 indirect participants through exhibit booth
- **16 Student presentations**
  - 2065 direct students in attendance
  - 2350 indirect students through exhibit booth



## GLAST Exhibit Booth since 9/03

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- ▶ **HEAD 9/04 (with Swift)**
- ▶ **AAS 1/04, 6/04 (with Swift)**
- ▶ **Santa Fe GRB 9/03 (with Swift)**
- ▶ **CSTA 10/3, 10/4 (with Swift)**
- ▶ **AAPT 8/04 (with Swift)**
- ▶ **AAPT-NCN 4/03 (with Swift)**
- ▶ **Expanding Your Horizons 5/04 (with Swift)**



# GLAST



## TOPS Learning Systems

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- Next module: SCALE THE UNIVERSE
  - Reviewed extensively by WestEd and SSU
  - Significantly revised, almost in print
  - TOPS workshop given during SEU Training during 7/04
  - Included preview of third module



The logo for TOPSCIENCE.ORG, featuring a red arrow pointing up and to the right, followed by the text 'TOPSCIENCE.ORG' in a stylized, purple, blocky font with a white outline and a green dot above the 'O'.

<http://www.topscience.org/>

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# Other printed materials

- GLAST stickers
- New materials in development
  - GLAST Race Card Game
  - AGN Pop-up Book - Activities, a story and more!
  - Supernova Educator's Guide (Joint with XMM-Newton)



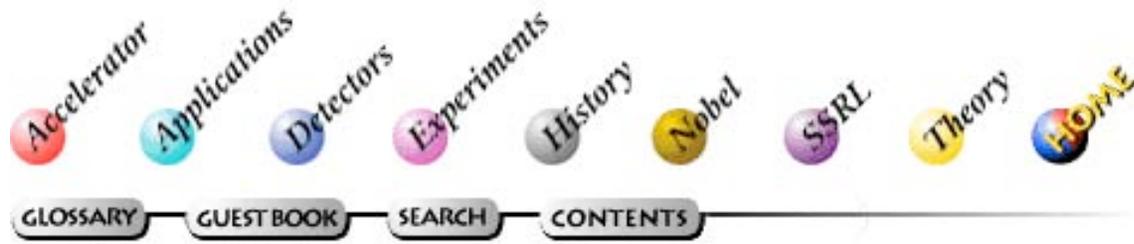
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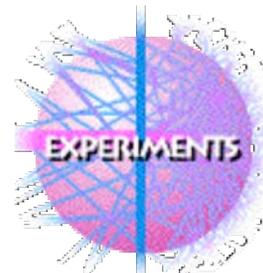
## SLAC Virtual Visitor's Center



SLAC



EXPLORE THE VIRTUAL VISITOR CENTER



*Interactive Gamma-ray exhibit will be added to*  
**<http://www2.slac.stanford.edu/vvc/>**  
*in 2004 – in progress*

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# GLAST



## PBS Television Special

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- Program script now in development
  - Focus on GRBs and Black Holes
  - 1 hour program on PBS NOVA
  - \$1M NSF grant received for TV and Large format full digital dome show with the Denver Museum of Nature and Science
  - Will include Swift launch
  - Should air by the end of 2005 or early in 2006



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# Global Telescope Network

- Program objects are AGN and GRBs
- GTN website:  
<http://glast.sonoma.edu/gtn>
  - Has finding charts for each target object
  - Background information about robotic telescopes and active galaxies
- SSU has designed archive for images
- AAVSO will archive magnitudes from CCD observations
- Other notable partners
  - Holton, KS Elk Creek Observatory
  - WIRO, Wyoming
  - Hands On Universe Project



**GLAST Optical  
Robotic Telescope  
at the California  
Academy of  
Science's  
Pepperwood  
Natural Preserve**



## GLAST Public Relations - Update

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- “Giveaways” at science meetings
  - Out of AGN flashlights
  - A few more Magic cubes
- GLAST public brochure –
  - New brochure at GPO
- Press coverage of GTN opening



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## E/PO Summary

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- **GLAST E/PO is exciting the public and students of all ages**
- **We meet all requirements for NASA E/PO**
- **We are on budget and moving ahead on all scheduled items**
- **Over 3500 teachers have been trained in 2004**
- **GLAST E/PO materials are in the hands of over 15,000 teachers nationwide**